CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

An ISO 9001:2008 Certified Company

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No.: CTCE/BBMP/WNo.7/AP/SDBC/AIV/2016-17 20.06.2016

Aggregate Impact Value

IS: 2386 Part IV

Customer	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Mr. Akhilesh P,** #3, Santrupthi, Vinayaka Layout (Old Venkategowda Layout), Hebbal Kempapura, Bangalore-24.
Name of the Work	Improvements to Roads and Drains at Ravishankar Residency Layout in Ward No. 7, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	AEE/(KOD.SUB.DIV)/103/2016-17 Dated: 23.05.2016
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	20.06.2016

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	385	389	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	87	86	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	298	303	
4	Aggregate Impact value = percent fines 100* (W_2/W_1)%	22.60	22.11	22.35

Comments:

→ Maximum allowable Aggregate Impact value for Semi Dense Bituminous Concrete is 27%

Note:

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Job No.: CTCE/BBMP/WNo.7/AP/SDBC/Shape_T/2016-17 : 20.06.2016

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	: **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	: **Mr. Akhilesh P,** #3, Santrupthi, Vinayaka Layout (Old Venkategowda Layout), Hebbal Kempapura, Bangalore-24.
Name of Work	: Improvements to Roads and Drains at Ravishankar Residency Layout in Ward No. 7, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	: AEE/(KOD.SUB.DIV)/103/2016-17 Dated: 23.05.2016
Technical Reference	: IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	: Semi Dense Bituminous Concrete
Date of Testing	: 20.06.2016

Result : Flakiness Index = **11.87%**

Elongation Index = **13.52%**

Result : Combined Flakiness & Elongation index **25.39%**

Comments:

Maximum allowable Flakiness & Elongation Index for Semi Dense Bituminous Concrete is 30%

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Job No.: CTCE/BBMP/WNo.7/AP/SDBC/Sp_Wa/2016-17 21.06.2016

Specific Gravity And Water Absorption Test

IS: 2386 Part III

Customer	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Mr. Akhilesh P,** #3, Santrupthi, Vinayaka Layout (Old Venkategowda Layout), Hebbal Kempapura, Bangalore-24.
Name of the Work	Improvements to Roads and Drains at Ravishankar Residency Layout in Ward No. 7, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	AEE/(KOD.SUB.DIV)/103/2016-17 Dated: 23.05.2016
Type of Mix	Semi Dense Bituminous Concrete
Source / Location	Hotmix Plant, Bangalore
Date of Testing	21.06.2016

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2028	2027	2029	
2	Weight of basket suspended in water	W_2 g	755	755	755	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1273	1272	1274	
4	Weight of saturated surface dry aggregate in air	W_3 g	2013	2014	2016	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	740	742	742	
6	Weight of oven dried aggregate	W_4 g	1999	1996	1998	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.701	2.690	2.693	2.695
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.753	2.757	2.760	2.757
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.70%	0.90%	0.90%	0.83%

Comments:

→ Maximum allowable Aggregate Water absorption value for Semi Dense Bituminous Concrete is 2.0%

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Job No.: CTCE/BBMP/WNo.7/AP/SDBC/Stripping/2016-17

21.06.2016

Stripping Value of Road Aggregates (Static Immersion Test)

IS: 6241

Customer	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Mr. Akhilesh P,** #3, Santrupthi, Vinayaka Layout (Old Venkategowda Layout), Hebbal Kempapura, Bangalore-24.
Name of the work	Improvements to Roads and Drains at Ravishankar Residency Layout in Ward No. 7, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	AEE/(KOD.SUB.DIV)/103/2016-17 Dated: 23.05.2016
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	21.06.2016

Type of binder : 80/100

Percentage of binder used : 5.0% by wt.

Total weight of aggregate : 200 g

Total weight of binder : 10.0 g

Temperature of water-bath : 40° C

Observation Number	Stripping, Percentage	Average, Percentage	Average Retained Coating, %
1	3.3	3.30	96.70
2	3.4		
3	3.2		

Comments:

→ Minimum allowable Aggregate retained coating for Semi Dense Bituminous Concrete is 95%

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Job No.: CTCE/BBMP/WNo.7/AP/SDBC/Stability/2016-17 21.06.2016

TEST REPORT ON STABILITY OF MIX

Customer	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	:	**Mr. Akhilesh P,** #3, Santrupthi, Vinayaka Layout (Old Venkategowda Layout), Hebbal Kempapura, Bangalore-24.
Name of the work	:	Improvements to Roads and Drains at Ravishankar Residency Layout in Ward No. 7, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	:	AEE/(KOD.SUB.DIV)/103/2016-17 Dated: 23.05.2016
Source of location	:	Hot mix Plant, Bangalore
Type of Mix	:	Semi Dense Bituminous Concrete
Date of Testing	:	21.06.2016

The results of the tests conducted on the bituminous mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-16)
1	Marshal Stability, at 60° C, Kn	10.20	10.30	8.2 Kn (min)
2	Marshal flow at 60° C, mm	2.40	2.50	2 – 4
3	Percent air voids	3.45	4.30	3 – 5
4	Percent voids in mineral aggregates (VMA %)	14.30	14.60	13 - 15
5	Percent voids filled with Bitumen (VFB %)	72.55	72.35	65 – 78
6	Density, g/cc	2.26	2.27	---

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